Source Water Assessment Program (SWAP) Report For Granville Village School

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

- Inventory land uses within the recharge areas of all public water supply sources;
- Assess the susceptibility of drinking water sources to contamination from these land uses; and
- Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program

Date Prepared: December 3, 2001

Table 1: Public Water System (PWS) Information

PWS NAME	**Granville Village School**
PWS Address	**State Route 57**
City/Town	**Granville, Massachusetts**
PWS ID Number	**1112006**
Local Contact	**Mr. Paul Petit, Business Manager**
Phone Number	**413-569-5391**

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well #1	1112006-01G	148	446	High

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential sources of contamination, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:
1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas
5. Appendix

1. Description of the Water System

The Granville Village School is a small, rural elementary school located on the south side of Route 57 in the center of town, with a total staff and student population of approximately 300. The well for the Granville Village School is located within the basement of the oldest section of the school building. Although the well was preliminarily tested to estimate the safe yield of the well, the Zone I of 148 feet and Interim Wellhead Protection Area (IWPA) of 446 feet, are based on actual water usage determined from metered data for the two highest months on record. The IWPA provides an interim protection area for a water supply well when the actual recharge area has not been delineated. The actual recharge area to the well may be significantly larger or smaller than the IWPA. Please refer to the attached map of the Zone I and IWPA.

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by **the** water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

The well is located in an aquifer with a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration. The 6-inch diameter well was drilled to a depth of 236 feet in 1933. Recent well inspection and investigations conducted as part of the site spill remediation have determined the effective well depth as 187 feet due to siltation. USGS has mapped this site as a sand and gravel aquifer; however, based on the depth of the well, it is assumed that the well is completed in the bedrock aquifer. Geologic mapping identifies the bedrock as heterogeneous layering of amphibolite, gneiss, and schist with the thickest layers being gneiss.

At the time this report was prepared, the Granville Village School well water does not require and does not have treatment. The DEP requires public water suppliers to monitor the quality of the water. For current monitoring results, please refer questions to the local contact identified in Table 1.

2. Discussion of Land Uses in the Protection Areas

There are a number of land uses and activities within the drinking water supply protection areas that are potential sources of contamination.

Key issues include:

1. **Non-conforming uses in Zone I;**
2. **An Underground Storage Tank (UST) With Heating Oil;**
3. **Confirmed Hazardous Materials/Oil Release Site;**
4. **Improper Storage of Hazardous Materials;**
5. **Floor Drains in Boiler Room; and**
6. **Septic System**

The overall ranking of susceptibility to contamination for the well is high, based on the presence of at least one high threat land use or activity in the IWPA, as seen in Table 2.

1. Non-conforming uses in Zone I – Currently, the well does not meet DEP's restrictions, which only allow water supply related activities in Zone Is. The facility's Zone I contains school buildings, athletic fields, roads, parking areas, and recreational activities. State highway Route 57 is within the Zone I, which is the only part of the Zone I not owned and/or controlled by the public water supplier. Please note that systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying systems.

Table 2: Table of Activities within the Water Supply Protection Areas

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Confirmed release site	Yes	No	**	RTN 1-0000842, Tier 2. See Appendix A
Fuel Storage - Below Ground (UST)	Yes	No	High	10,000 gallon heat oil tank
Storage of hazardous materials	Yes	No	High	Remove hazardous materials and old boiler components near wellhead
Automotive repair and sales	No	Yes	High	VSQG and auto storage
Floor drain in boiler room	Yes	No	Moderate	Bring the floor drains into compliance with Department Regulations
Septic System	No	Yes	Moderate	See septic systems brochure in the appendix
School Structures, athletic fields	Yes	Yes	Moderate	Restrict fertilizer, pesticides, and salt use
Parking lot & roads	Yes	Yes	Moderate	Work with local officials to insure maintenance

*** -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/. ** - See Appendix A.**

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400 foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

Recommendations:

√ Do not conduct any new activities within Zone I.
√ Consider developing a new well that is in compliance with Zone I requirements.
√ Do not use or store pesticides, fertilizers or road salt within the Zone I.

2. Underground Storage Tank (UST) – There is a UST located on the southwest side of the school near the building, with a maximum content of 10,000 gallons of oil. The tank is a double walled tank with monitoring, installed in about 1990.

Recommendation:

√ USTs in close proximity to the water supply should be closely monitored especially during deliveries. Any upgrades and modification must meet current construction standards and be done consistent with Massachusetts's plumbing, building, and fire code requirements. Consult with the local fire department for any additional local code requirements regarding USTs.

3. Confirmed Oil Release Site - The Zone I contains a DEP Tier II Confirmed Oil and/or Hazardous Material Release Site, indicated on the map as Release Tracking Number 1-0000842. The release was discovered in July of 1990 during the removal of an oil tank. Although contaminated soils were removed from the site, some impacted soils remain beneath the foundation of the building. A Response Action Outcome and an Activities and Usage Limitation have been submitted to the Department's Bureau of Waste Site Cleanup (BWSC). The drinking water program requires regular water quality monitoring including specific analyses to detect petroleum byproducts. For information regarding the location of this site refer to the attached map. Appendix A includes additional information regarding the Massachusetts Contingency Plan (MCP) and where additional information is available. Contact the BWSC at 413-784-1100 for more information.

Recommendation:

✓ Comply with the requirements of the MCP process and continue monitoring as prescribed by DEP Drinking Water Program.

4. Improper Storage of Hazardous Materials -- There is storage of unused chemicals and old boiler components within the Zone I (located about 10 feet from the well head), and storage of uncontained gasoline jugs and floor finishers within the IWPA. In addition there is a portion of the floor that is still dirt (not cemented) from when the site remediation was conducted.

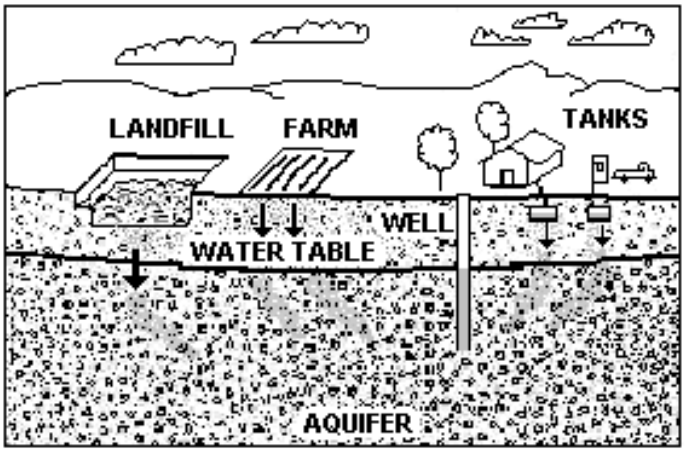

Figure 1: Example of how a well could become contaminated by different land uses and activities.

Recommendations:

✓ Remove all hazardous materials from the Zone I.
✓ Seal the floor.

5. Floor Drains in Boiler Room -- Floor drains are located in the boiler room that discharge to the septic system. Title 5 prohibits disposal of any wastewater other than sanitary waste to a septic system. The floor drain must be sealed or connected to a tight tank if it cannot be protected so as to guarantee boiler blow down, oil or other prohibited discharges are prevented from entering the floor drain. There must not be hazardous materials stored in the boiler room.

Recommendations:

✓ Bring the floor drains into compliance with Department Regulations (refer to Industrial Floor Drain Brochure attached).
  * Contact the UIC coordinator for the Western Region Office of the Department (Rick Larson 413-755-2207).
  * Interim Actions: cease using the floor drains.
✓ Oil lines from the tank to the boiler can be sleeved so that any leaks would drain back to the tank or minimal oil could leak to the boiler room.

For More Information:

Contact Catherine Skiba in DEP's Western Regional Office at (413) 755-2119 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at: www.state.ma.us/dep/brp/dws/

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws, including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been made available to the public water supplier, town boards, and the local media.

- ✓ Require a policy and plan for maintenance operations, especially when oil filters are changed. We recommend that you require your boiler maintenance contractor to use containment and have absorbent materials on hand to prevent accidental leaks while conducting routine maintenance. The contractor should be responsible for the off-site disposal of any boiler blow down generated during maintenance.

6. Septic Systems -- The school's septic system is located within the IWPA, as are the septic systems of the low density housing within the IWPA. The most significant threats from a septic system are from lack of maintenance and improper disposal of non-sanitary waste.

Recommendations:

- ✓ Provide residents with information about proper maintenance and disposal practices for septic systems. Septic system components should be located, inspected, and maintained on a regular basis. Refer to the attachments for more information regarding septic systems.
- ✓ Avoid septic tank cleaners, especially those with acids and solvents.

Humphrey's Car Repair is located adjacent to the Granville Village School. Humphries is a registered as a Very Small Quantity Generator of hazardous waste. There are no floor drains and the facility appears to be well managed. There are several cars parked at the facility fro sale and service. The school should maintain communication with Humphries and other neighbor's located within the IWPA to ensure BMPs are employed to assist in protecting not only the school's water supply but also private wells in the community. Work with the Town to have any stormwater catch basins located within the IWPA inspected, maintained, and cleaned on a regular schedule.

On the outer edge of the IWPA is a crop field historically used for corn. Request that the landowners utilize Best Management Practices for their agricultural practices that include nutrient and pesticide management. Be sure that they are aware that your facility is a public water supply. If they do not already have a farm plan, refer them to the Natural Resource Conservation Service. Alternatively, they may follow a plan developed through the publication *On Farm Strategies to Protect Water Quality: An Assessment and Planning Tool for Best Management Practices.* Information on funding and other resources for agricultural management is available through the Massachusetts Department of Food and Agriculture at (617) 626-1700 or http://www.massdfa.org/bureaus.htm.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the well's susceptibility to contamination. Granville Village School should review and adopt the key recommendations above and the following:

Priority Recommendation:

√ Consider well relocation if Zone I threats cannot be mitigated

Zone I:

- √ Keep non-water supply activities out of the Zone I.
- √ Remove all non-water supply activities from the Zone I to comply with DEP's Zone I requirements.
- √ Prohibit public access to the well. Posting signs in appropriate, visible locations.
- √ Bring floor drains into compliance with UIC and Title 5 regulations.
- √ Conduct regular inspections of the Zone I. Look for illegal dumping, evidence of vandalism, check any above ground tanks for leaks, etc.
- √ If the Town intends to continue utilizing the structures in the Zone I, use BMPs and restrict activities that could pose a threat to the water supply.
- √ Redirect road and parking lot drainage in the Zone I away from well.
- √ Do not use or store pesticides, fertilizers, deicers or hazardous materials within the Zone I.
- √ Upgrade to propane or natural gas as an alternate fuel for power sources.

Training and Education:

√ Train custodial staff, groundskeepers, certified operator, and food preparation staff on proper hazardous material use, disposal, emergency response, and BMPs. Post labels as appropriate on raw materials and hazardous waste.
√ Post drinking water protection area signs at key visibility locations.
√ Incorporate groundwater education into school curriculum (K-6 and 7-12 curricula available; contact DEP for copies).
√ Work with your community to ensure that stormwater runoff is directed away from the well and is treated according to DEP guidance.

Facilities Management:

√ Implement standard operating procedures regarding proper storage, use and disposal of hazardous materials. To learn more, refer to http://www.state.ma.us/dep/bwp/dhm/files/sqgsum.pdf for the Requirements for Small Quantity Generators. The facility is currently not registered as a generator of hazardous waste or waste oil.
√ Eliminate non-sanitary wastewater discharges to on-site septic systems. Seal floor drains in the boiler room or connect to a tight tank. (See attachment)
√ Remove hazardous materials from near the wellhead.
√ As tanks age, upgrade all oil/hazardous material storage tanks to incorporate proper containment and safety practices.
√ Implement Best Management Practices (BMPs) for the use of fertilizer, herbicides and pesticides on facility property.
√ Septic system components should be located, inspected, and maintained on a regular basis.
√ Concrete pads should slope away from well and well casing should extend above ground.
√ For utility transformers that may contain PCBs, contact the utility to determine if PCBs have been replaced. If PCBs are present, urge their immediate replacement. Keep the area near the transformer free of tree limbs that could endanger the transformer in a storm.

Planning:

√ Work with local officials to develop Aquifer Protection District Bylaws and include the facility's IWPA in the district.
√ Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
√ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a land use inventory to assist in setting priorities, focusing inspections, and creating educational activities.

Agricultural:

√ Encourage farmers in the IWPA to seek assistance from the DFA and Natural Resource Conservation Service (NRCS) in addressing nutrient and pesticide management issues.

Funding:

The Department's Wellhead Protection Grant Program provides funds to assist public water suppliers in addressing Wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the "Wellhead Protection Grant Program". For additional information, please refer to the attached program fact sheet. Please note: each program year the Department posts a new Request for Response for the Grant program (RFR). Other funding opportunities are described in "Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation" at http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Fact Sheet
- Your Septic System Brochure
- UIC Fact Sheet
- Healthy Schools Fact Sheet
- Wellhead Protection Grant Program Fact Sheet
- Source Protection Sign Order Form

5. Appendix

Table of DEP Regulated Chapter 21E Hazardous Materials Release Sites